AMENDMENTS TO THE CLAIMS

1-28. (Canceled)

29. (New) An integrated circuit chip comprising:

a semiconductor substrate comprising at least one transistor; and

a pump in fluid communication with a ventilating duct and configured to cool the chip, the pump comprising:

a cavity disposed on the semiconductor substrate;

a conductive layer covering at least a portion of an interior of the cavity;

a flexible membrane, including a conductive material, placed above the cavity;

a dielectric layer that provides insulation between portions of the conductive layer and the conductive material of the membrane which are close to each other;

a pumping volume defined between the conductive layer and the flexible membrane;

at least one opening that provides fluid communication to the pumping volume through the conductive layer;

terminals to receive and apply voltage between the conductive layer and the membrane to cause the flexible membrane to move; and

wherein the flexible membrane is configured to cover the at least one opening upon application of the voltage.

30. (New) The integrated circuit chip of claim 29, wherein the cavity has a cup shape so that an interval between the conductive layer and the membrane progressively increases from a border, formed between the cavity and an upper surface of the substrate, to a bottom of the cavity.

31. (New) The integrated circuit chip of claim 29, wherein the at least one opening is positioned substantially at a bottom of the cavity.

32. (New) The integrated circuit chip of claim 29, further comprising a ventilating duct formed at least partially in the semiconductor substrate of the integrated circuit and that leads to the at least one opening.

33. (New) The integrated circuit chip of claim 29, wherein the dielectric layer is disposed on the conductive layer.

34. (New) The integrated circuit chip of claim 29, wherein the dielectric layer is disposed on the flexible membrane.

35. (New) The integrated circuit chip of claim 29, wherein the flexible membrane comprises a conductive material.

36. (New) The integrated circuit chip of claim 29, wherein the at least one opening comprises a first opening and a second opening, each opening providing fluid communication to the pumping volume through the conductive layer.

37. (New) The integrated circuit chip of claim 36, further comprising a first ventilating duct formed at least partially in the semiconductor substrate of the integrated circuit and that leads to the first opening and a second ventilating duct formed at least partially in the semiconductor substrate and that leads to the second opening.

38. (New) The integrated circuit chip of claim 36, wherein application of the voltage to the terminals causes the flexible membrane to move toward the conductive layer to close fluid communication between the second opening and the pumping volume.

39. (New) The integrated circuit chip of claim 36, wherein the second opening is positioned closer to a border of the cavity than the first opening is positioned to the border, the border being between the cavity and an upper surface of the substrate.

40. (New) The integrated circuit chip of claim 39, wherein upon application of a sufficient voltage between the conductive layer and the membrane, the flexible membrane is adapted to cover the second opening and not the first opening.

41. (New) The integrated circuit chip of claim 36, wherein the flexible membrane is configured to cover at least the second opening when the voltage is applied.

42. (New) The integrated circuit chip of claim 36, wherein the second opening is larger than the first opening to promote the introduction of more air through the second opening than the first opening to the pumping volume when the voltage is reduced.

43. (New) An integrated circuit chip comprising:

a semiconductor substrate comprising at least one transistor and at least one ventilating duct; and

a pump configured to cool the chip, the pump being disposed on the semiconductor substrate and in fluid communication with the at least one ventilating duct.

44. (New) The integrated circuit chip of claim 43, wherein the pump comprises a cavity disposed on the semiconductor substrate.

45. (New) The integrated circuit chip of claim 44, wherein the pump comprises a conductive layer covering at least a portion of an interior of the cavity.

46. (New) The integrated circuit chip of claim 45, further comprising at least one opening that provides fluid communication between the at least one ventilating duct and the pump through the conductive layer.

47. (New) The integrated circuit chip of claim 44, wherein the pump comprises a flexible membrane that includes a conductive material, wherein the flexible membrane is disposed above the cavity.

48. (New) The integrated circuit chip of claim 47, wherein the pump comprises a dielectric layer that provides insulation between portions of a conductive layer and the conductive material of the flexible membrane, the conductive layer and the conductive material being in close proximity to one another.

49. (New) The integrated circuit chip of claim 48, wherein the pump comprises terminals to receive and apply voltage between the conductive layer and the membrane to cause the flexible membrane to move.

50. (New) The integrated circuit chip of claim 49, wherein the flexible membrane is configured to cover at least one opening in the conductive layer that provides fluid communication between the pump and the at least one ventilating duct upon application of the voltage.